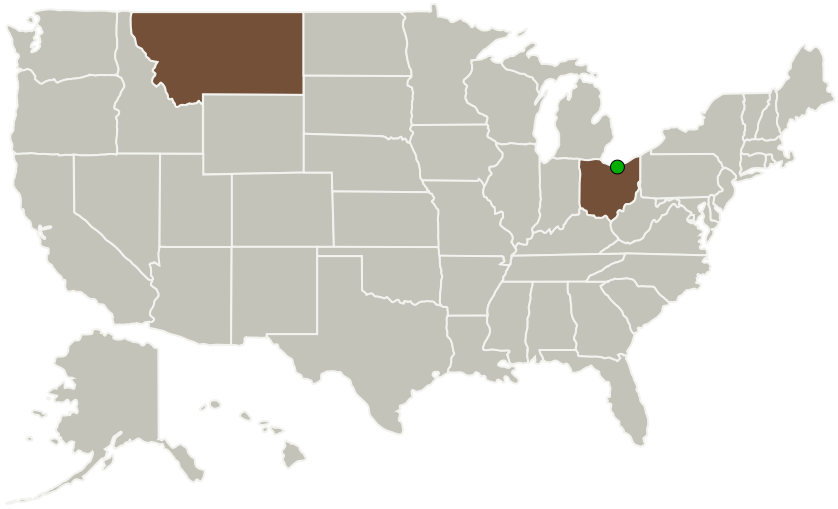
Droplet-Sizing Liquid Water Content Sensor, Phase I

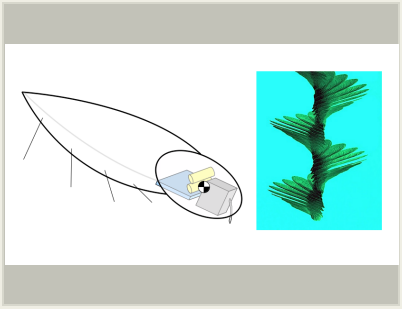
Completed Technology Project (2013 - 2013)

Project Introduction

Icing is a significant aviation hazard, and icing conditions continue to be difficult to precisely forecast or locate in real time. An in-situ sensor, which can be flown coupled with a radiosonde, is needed which can both measure supercooled liquid water content in clouds as well as characterize the droplet sizes. This sensor will support the calibration and validation of remote-sensing methods used to detect icing conditions, and can also be used on its own to support operational meteorology applications. Anasphere, Inc. proposes to develop a sizing supercooled liquid water content (SSLWC) sonde which will meet this need. It will be based on proven vibrating-wire technology which has been used for total water content measurements, but with an altogether different physical implementation that will enable droplet sizing. Phase I will involve the aerodynamic design of the SSLWC sonde, icing tunnel tests demonstrating key elements of its function, and a live flight test to gather information on the sonde's aerodynamic characteristics. Phase II will involve further tunnel tests, laboratory calibration development, design for manufacturability, and flight tests in icing conditions.

Primary U.S. Work Locations and Key Partners





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Organizations Performing Work	Role	Type	Location
Anasphere, Inc.	Lead Organization	Industry	Belgrade, Montana
Glenn Research Center(GRC)	Supporting Organization	NASA Center	Cleveland, Ohio

Primary U.S. Work Locations	
Montana	Ohio

Project Transitions

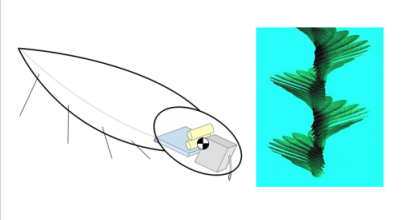
May 2013: Project Start

November 2013: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/140354)*

Images



Project Image
Droplet-Sizing Liquid Water Content Sensor
(https://techport.nasa.gov/image/134460)

Organizational Responsibility

Responsible Mission Directorate:
Space Technology Mission Directorate (STMD)

Lead Organization:
Anasphere, Inc.

Responsible Program:
Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:
Jason L Kessler

Program Manager:
Carlos Torrez

Principal Investigator:
John A Bognar

Co-Investigator:
John Bognar

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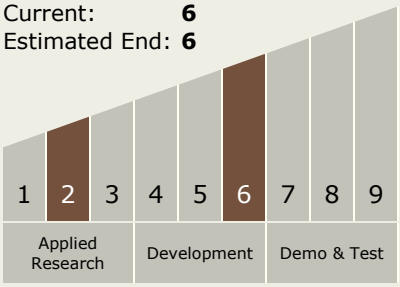
Technology Maturity (TRL)

Start: **2**
Current: **6**
Estimated End: **6**



Technology Areas

Primary:

- TX01 Propulsion Systems
  - TX01.3 Aero Propulsion
    - TX01.3.11 Engine Icing

Target Destinations

Earth, The Moon, Others Inside the Solar System, Outside the Solar System, The Sun, Mars